Comments for the Record

Comments on EPA's Carbon Pollution Emission Guidelines for Existing Stationary Sources

CATRINA RORKE, SAM BATKINS | DECEMBER 2, 2014

We appreciate the opportunity to comment on the Environmental Protection Agency's (EPA) proposed regulation, titled "Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units," referred to here as "the proposal" or "Clean Power Plan (CPP)." This proposal will have broad and significant impacts, and so must be crafted to promote certainty for state regulators and utilities, meet pollution targets at a low cost, and ensure the reliability and functionality of our electricity delivery system.

We have numerous concerns about the CPP, including legal questions over the use of 111(d) in this circumstance, regulatory overreach implied in outside-the-fenceline compliance contributions, timing in relation to other EPA rules, clarity about rate-based or mass-based compliance, and the complications of assembling new regional compliance partnerships. For the purpose of this comment, however, we would like to specifically highlight concerns with four aspects of EPA's proposed rule, assuming rate-based compliance: 1) costs and employment implications, 2) baseline considerations, 3) feasibility of building blocks, and 4) implementation concerns.

COSTS AND EMPLOYMENT IMPLICATIONS

Costs

At $8.8 billion, this rule is already one of the most burdensome regulations in recent years, but it appears that EPA has omitted the lost employment costs from retired coal and drastically underestimated the green energy investment needed to create 78,800 jobs by 2020. EPA's Regulatory Impact Analysis (RIA) spends a considerable amount of time on unquantified benefits, but there are several sections of unquantified costs that EPA appears to omit. For example, if EPA's employment projections of 78,800 are true, the burden of energy efficiency improvements will cost the economy $30.7 billion in 2020, a figure never mentioned in the RIA. Finally, it appears there is no cost itemization of EPA's four main "building blocks," which has been a common feature in past EPA proposals.

Based on EPA's RIA, there are four cost components:

1. Annualized Cost of Capital Investment in New Sources;
2. Heat Rate Improvements at Existing Sources;
3. Ongoing Cost of Operating Pollution Controls; and
4. Fuel Shifting to Natural Gas and Zero Carbon Energy.

EPA also includes "and other actions associated with compliance," likely referring to miscellaneous burdens and paperwork compliance. EPA projects that by 2020 annual labor costs will exceed $65.5 million, complying

with 900,000 burden hours. This translates to $72 per hour complying with the proposed requirements. However, by 2030 labor costs will drop to $8.2 million, from 217,000 hours of regulatory requirements.

The hourly labor cost drops to $37, a 48 percent decline. Yet, EPA gives little explanation for why labor costs of compliance would fall so dramatically. If labor costs remained at $72 per hour, the paperwork burden in 2030 would be $15.6 million, not $8.2 million as EPA projects.

Coal Retirement Projections

EPA initially projected 4.8 GW of additional coal retirements because of the Cross-State Air Pollution Rule (CSAPR) and 4.7 GW of coal retirements from the final Mercury Air Toxics Standards (MATS) rule. However, the Integrated Planning Model (IPM), which was integral to modeling CSAPR, MATS, and the current proposal, does not appear to have accurately forecasted past coal retirements.

Based on AAF's database of retiring power plants, which cite EPA regulations as a reason for closing, there will be more than 100 plants, resulting in 51.7 GW of coal retirements by 2020. One company alone retired nearly 6 GW of capacity from recent regulations, making IPM models of 9.5 GW of retirements appear seriously flawed. More than 40 companies and 15,000 employees have been directly affected by recent EPA rules affecting coal plants, and, as the RIA admits, the current proposal will only exacerbate recent job losses in the industry.

The agency's models have had trouble forecasting in the past. As the RIA concedes, "The regional benefit-per-ton estimates overestimated the CSAPR benefits by 14 percent and MATS benefits by 29 percent." Given the limitations of past forecasts, it's possible that benefits could once again be inflated and costs will exceed EPA's $8.8 billion figure.

In the proposed rule, EPA projects approximately 49 GW of additional retirements, or roughly one-fifth of all coal-fired capacity. However, NERA, an economic consulting firm, recently projected that the proposed rule could retire anywhere from 45 GW of coal capacity, to more than 160 GW (65 percent of coal capacity). With these additional retirements, total coal retirements from this decade could easily force approximately 100 GW of coal into retirement. Can EPA name a time in history when federal regulations have mandated the closure of so much capacity in such a short amount of time?

Employment Impact

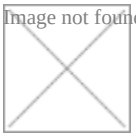
To forecast which plants and states would be most affected, AAF used the most recent eGrid data. Coal-fired plants were sorted by their efficiency, CO_2 output/MWh and nominal heat rate. Given that plants with heat rates well above the average CO_2/MWh rate will make it more difficult for states to comply, these inefficient plants will likely retire first.

AAF's sample contains 93 plants in 31 states, with an average CO_2/MWh rate of 2,626, or roughly 20 percent less efficient than the average coal plant. These 93 plants employ at least 8,000 employees and have a nameplate capacity of approximately 50 GW. The figure of 8,000 employees represents the low-end of job losses in the sector because according to EPA's technical support document, retired coal could shed 15,600 jobs by 2020, 14,100 jobs by 2025, and 12,300 jobs by 2030. This is at least 42,000 total jobs in the industry.

Obviously, there are a variety of factors that will lead to early retirements of the existing fleet: the pending U.S. Supreme Court case litigating MATS, reliability, and the feasibility of switching the facilities to natural gas.

However, given that older less efficient plants will make it more difficult for states to comply with EPA's benchmarks, we view these figures as a possible scenario should the final rule resemble the proposal.

Below are the affected states and possible retirements:



Based on AAF data, Pennsylvania is the most affected state, with 13 plants in danger of retirement. Pennsylvania is followed by Michigan, with seven possible retirements, and Illinois with six. There are 14 states that could force at least three plants into early retirement.

However, EPA does not monetize the loss of employment in the coal industry. Recently, the University of Chicago's Jonathan Masur and Eric Posner examined several past RIAs from EPA and found that had the analyses monetized the job losses, the costs of the regulations would have exceeded the benefits. Using a central estimate of $100,000 per displaced worker, which the existing literature supports, monetized costs for this rulemaking would total $4.2 billion.[1] This would bring topline compliance cost to $13 billion. For comparison, $4.2 billion is more than double the cost of any single rule issued in FY 2013, according to the Office of Information and Regulatory Affairs (OIRA).

EPA's Employment Claims

EPA estimates employment could increase between 57,000 and 78,800 jobs, depending on the adopted option. Compared to previous employment estimates based on peer-reviewed data, EPA essentially invents employment numbers from whole cloth. Given the supposed flexibility that EPA offers states through the four "building blocks," the employment projections assume mathematical precision on demand-side efficiency spending and rely on a jobs multiplier with no basis in reality. As EPA concedes, "Employment impacts of demand-side energy efficiency programs have not been extensively studied in the peer-reviewed, published economic literature."

EPA uses the "Annual Survey of Manufacturers" data, admitting that 50 percent of the sample is unrelated to green jobs. As the RIA notes, "[T]his analysis implicitly assumes that the same number of jobs per dollar are supported in construction service sectors as in manufacturing." EPA then arrives at a multiplier of 2.56 energy efficiency jobs per million dollars of spending, or $390,625 per job. The earnings for the median worker are $30,454; the median household income is $52,250. Yet, EPA projects the investment needed to create one job approaches $400,000. That is an expensive price tag to create a single job.

In addition, EPA's multiplier of $1 million in investment to create 2.56 jobs strains credibility. EPA has frequently cited the work of Richard Morgenstern, who found that $1 million in environmental spending translates into roughly 1.5 new jobs, significantly less than EPA's multiplier. The Morgenstern figure was also "statistically insignificant," adding further skepticism to EPA's jobs multiplier.

Furthermore, when the Congressional Budget Office (CBO) analyzed the effects of the 2009 Stimulus, it created a range of output multipliers, ranging from 0.4 for deferral of income to 2.5 for "purchases of goods and services by the federal government." Does EPA expect the multiplier for green jobs to eclipse the highest figure that CBO found when examining the results of the Stimulus?

EPA also relies on models of green investment spending in states. This possible spending, multiplied by EPA's 2.56 jobs per $1 million in investment, yields roughly 78,800 jobs. If true, that means the nation will spend more than $30.7 billion on energy efficiency investments by 2020.

Yet, this figure is not contained in EPA's RIA. Instead, EPA claims anywhere from $8 billion to $12.3 billion "demand-side" energy efficiency costs by 2020. Assuming job creation of more than 78,000, EPA underestimates demand-side costs by threefold. According to the RIA, by 2030 EPA's demand-side costs skyrocket, ranging from $42 billion to $51 billion. If EPA does underestimate 2020 costs by threefold, a similar extrapolation for 2030 costs would approach $150 billion.

On the other hand, if EPA disputes the $30 billion in demand-side costs by 2020, then its jobs claims are hollow. Given that $30 billion alone complying with energy efficiency approaches EPA's lower benefit figures, it's possible that the costs from this rulemaking could exceed benefits by that time.

We urge EPA to review the existing literature on the cost per displaced worker and its employment analysis. EPA's multiplier is significantly higher than past estimates and $30 billion in energy efficiency spending by 2020 is three times what EPA reports.

BASELINE CONSIDERATIONS

EPA has established a clear goal of reducing carbon dioxide emissions from the power sector 30 percent below 2005 levels by 2030. The proposal is designed to maximize flexibility, but this flexibility is undermined by poorly conceived parameters that pollute the baseline. The proposal builds a system that imposes compliance obligations on states according to their perceived ability to contribute to national emissions reduction goals and creates a number of measurement and implementation concerns. We touch on three issues: narrow consideration of existing carbon-free emissions, assumptions about efficiency investment potential, and penalties for early actors.

Covered Sources vs. Fleet-wide Emissions

EPA's proposed approach narrowly targets the existing fossil fuel-fired electric generating fleet, reducing carbon emissions from a 2012 average rate of 1,444 pounds per megawatt hour (lb/MWh) to a 2030 average rate of 991 lb/MWh. However, the lowest rate achievable with fossil fuels – per EPA calculations – would be a natural gas fleet emitting 1,135 lb/MWh, clearly well above the emissions target. Consequently, EPA must measure compliance according to a future fleet-wide emissions average. This artificial distinction between existing and future fleet generation creates a number of measurement and compliance concerns.

As proposed, this rule ignores all existing hydropower and 94 percent of existing nuclear generation. Together, these sources generated 26 percent of nationwide electricity production in 2012 and represent more than 80 percent of the carbon-free power supply. The result is an emissions rate target that is out of step with the current reality. Consider the states in Table 1, which would be able to increase actual carbon emissions over the compliance period if actual emissions from their generation fleet were measured accurately in the baseline.

Table 1. Fleet-wide Emissions Targets and Emissions Rates for Selected States

State	EPA 2030 Emissions Rate Target (lb/MWh)	Actual 2012 Emissions Rate (lb/MWh)	Target Change in Emissions Rate (%)
Alaska	1,003	906	+11%
Alabama	1,059	1,002	+6%
California	537	524	+2%
Connecticut	540	385	+40%
Idaho	228	93	+145%
Illinois	1,271	996	+28%
Maryland	1,187	1,111	+7%
Maine	378	290	+30%
Montana	1,771	1,300	+36%
New Hampshire	486	483	+1%
New Jersey	531	433	+23%
New York	549	516	+6%
Oregon	372	252	+48%
Pennsylvania	1,052	1,031	+2%

State	EPA 2030 Emissions Rate Target (lb/MWh)	Actual 2012 Emissions Rate (lb/MWh)	Target Change in Emissions Rate (%)
South Carolina	772	764	+1%
South Dakota	741	562	+32%
Tennessee	1,163	1,100	+6%
Virginia	810	792	+2%
Washington	215	124	+73%

EPA's baseline calculations disguise the 31.4 percent of the power supply currently generated from carbon-free sources and undervalue the carbon reduction accomplishments of 11 states that draw more than half their electricity from nuclear and renewable sources.

As we move into the compliance window, however, EPA must change its tune. As established earlier, the compliance target is not achievable with even the cleanest of fossil fuels. Compliance cannot be measured according to the emissions rate of the fossil fleet in isolation, but must include additional power sources. EPA will measure a state's emissions rate by considering emissions from the fossil fleet and additional carbon-free generation from a narrow subsection of the nuclear fleet, existing and new renewable energy (RE), and the avoided production made possible by energy efficiency investments.

This asymmetric treatment of carbon-free sources that bolsters production from variable sources and diminishes the role of baseload power inspires an important question for EPA: is it possible to account for all existing power generation in establishing emissions targets and measuring compliance? Such an approach would appropriately credit early-acting states that rely heavily on nuclear and hydro and create near-term incentives to improve the efficiency of and power production from these significant existing sources. If EPA does not capture these existing sources in compliance measurement, it must create a framework for evaluating the additional power production made possible by efficiency upgrades or be prepared to abandon significant low-cost compliance possibilities.

Efficiency Assumptions

The assumptions behind building block 4, demand-side energy efficiency improvements, create a number of measurement and verification concerns. EPA's analysis suggests a perverse dichotomy in which available energy efficiency improvements would not be realized in the absence of this proposal, but would be adopted completely with the proposal. This may be a limitation of EPA's analytical capabilities, but it most surely contradicts reality.

According to the American Council for an Energy-Efficient Economy, states spent $6.3 billion on electricity efficiency programs in 2013, even without the influence of EPA's proposal.[2] Efficiency improvements are obviously cost effective without the CPP in place. In fact, NERA Economic Consulting found that, "rational consumers would adopt the [efficiency] changes without the need for a government program.[3]" The result of

this analytical limitation is that it is now impossible to compare EPA's work to analyses that capture cost-effective efficiency in the baseline, and we have a poor understanding of the proposal's costs.

Moreover, EPA's analysis considers only the cost of the efficiency investments themselves and not the program costs necessary to overcome barriers to those investments at present. This undoubtedly hides the true costs of efficiency programs that will contribute to compliance.

Finally, it is unclear how EPA treats demand-side efficiency programs that are underway and will continue to yield efficiency improvements during the compliance window.

Penalties to Early Actors

As proposed, the CPP takes early action for granted. Across the board, states that have already achieved substantial reductions in carbon emissions, improved efficiency at coal-fired facilities, or executed successful demand-side efficiency programs are asked to do more than their less proactive neighbors. We consider this piece-by-piece.

First, the proposal presumes that states that have renewable capacity or statutory goals to increase carbon-free generation will meet and, in some instances, exceed, those goals. The RE targets as established in building block 3 assume that states can achieve higher levels of renewable generation by virtue of existing installed capacity and the presence of binding or voluntary state targets. States may fall short of these goals for a variety of reasons, not least complications over financing, technology, reliability, or infrastructure.

Second, states that have already improved the efficiency of coal facilities are not credited for those investments. Building block 1 of the CPP proposes that all coal facilities can achieve a 6 percent heat rate improvement. While we'll address issues with that assumption later, it is clear that facilities that have already undertaken the challenge to realize significant efficiency improvements may not be able to achieve further gains.

Third, the CPP will not credit for compliance any emissions reductions from state measures that occurred prior to June 18, 2014. States with existing Energy Efficiency Resource Standards or other programs to improve efficiency will not be able to count later-year efficiency improvements from these programs toward compliance, and instead must rely on more expensive efficiency improvements during the compliance period. Unfortunately, states that have taken early action tend to have higher energy efficiency improvement obligations than states that have not, further compounding this burden

In all three instances, early actors are at a distinct disadvantage. Either these states must find room in other building blocks to reduce the fleet-wide emissions rate or they must stress transmission systems, retire coal facilities that are already the most efficient in the nation, or make expensive additional investments in end-use efficiency programs. These perverse incentives should not be the goal of the CPP. EPA should account for and credit early action to avoid imposing undue implementation problems on the more proactive states.

FEASIBILITY OF PROPOSED BUILDING BLOCKS

The CPP compliance targets are derived from calculations that rely on a series of building blocks. These building blocks reflect EPA's best estimates on available abatement measures, though many stakeholders have indicated concern with EPA's analysis. It is important that the rule establishes clear and achievable compliance targets, and so we encourage EPA to reevaluate its calculations in light of these concerns. We'll address each

building block in turn, but it is important to note that complications within the building blocks are extraordinarily interdependent and bear heavily on one another.

Building Block 1: Heat Rate Improvements

EPA proposes as a first step to reduce the carbon intensity of power production at existing fossil facilities by improving the efficiency of operations. This building block presumes that the coal fleet can achieve economic efficiency gains – and subsequent emissions reductions – of 6 percent on average. It is not clear that this is a reliable or achievable benchmark.

Facilities already face a number of incentives to maximize unit heat rate, the most important being profit motive. If economic improvements to the facility are available, those improvements are accounted for in routine maintenance and capital investment activities.

More importantly, however, potential heat rate improvements to existing facilities depend entirely on site-specific issues, which EPA did not evaluate. Instead, EPA relied on a study that examined a wide range of heat rate improvements that may be possible across coal facilities in a range of types and sizes.[4] Certainly, not every investment is applicable to all units, but should be considered in context with facility design, operating conditions, age, maintenance status, etc. It is also important that EPA recognize that heat rate improvements are not one-time investments, but that each improvement degrades over time and with use. Assuming 6 percent improvement across the board does not reflect a realistic understanding of facility operations.

EPA also failed to consider the heat rate ramifications of other regulations. Post-combustion controls to remove pollutants and improve environmental performance require energy to operate and to reduce a unit's net heat rate. New regulations are expected to have a considerable impact on the existing coal fleet, particularly MATS and pending 316(b) regulations under the Clean Water Act. Achieving 6 percent efficiency gains while adding additional environmental protections unrelated to the CPP may not be possible for the fleet.

Finally, under the CPP, coal facilities will be forced into load following operations to support grid reliability. Intermittent wind and solar power require supporting sources of power to scale up and down in response to power availability. This role is traditionally served by natural gas, which can cycle quickly and efficiently. As we'll address next, the CPP will force natural gas to occupy a stronger baseload power position, and will not be available to serve its reliability function. Instead, coal facilities will be called on to cycle, creating non-optimal operating conditions that will further reduce any positive impacts from heat rate improvement investments.

Building Block 2: Re-Dispatch of Existing Units

The next step to reducing emissions from the power sector is to increase the baseload contributions from the cleanest fossil sources: natural gas combined cycle facilities. EPA proposes that these facilities can operate at a 70 percent capacity factor and substitute for higher-emission coal power.

There's little evidence that the 70 percent capacity factor will represent a technological concern for the power sector; the most significant concern is rather that natural gas facilities do not have the experience of sustained operations at this level. Natural gas facilities typically respond actively to changes in the price of natural gas and the availability of supply given pipeline infrastructure and competing demand. EPA's analysis suggests that low natural gas prices will enable sustained operations at a high capacity factor, but this is a very dubious assumption.

Natural gas has a highly volatile price curve, and multi-year projections are regularly inaccurate. Even short-term events can cause wild oscillations in the price of natural gas; last winter's polar vortex so stressed natural gas infrastructure in the northeast that many natural gas facilities had to curtail operations or sell power at absurdly high prices. EPA should not assume that present low prices will sustain their emissions reduction objectives.

Natural gas infrastructure will remain a concern. While coal deliveries are quite flexible in timing and transportation options, natural gas depends on available pipeline capacity in the distribution system and at each facility in real time. EPA states that it is not concerned with infrastructure adequacy on the whole, but fails to analyze whether local changes in the generation mix will require pipeline installation or capacity expansion. Regional infrastructure limitations will complicate and can delay increased reliance on natural gas. Planning, permitting, contracting, financing, and building this infrastructure – if needed – will delay full implementation of the CPP.

Finally, this building block dramatically oversimplifies the ability of one generation source to substitute for another. Relying on natural gas for high-capacity factor, baseload operations creates significant dispatch, reliability, and transmission concerns for operators. Natural gas has played a valuable role in producing high levels of power to support variable power supplies and peak demand, and contributing to system voltage and frequency needs. All of these roles will be complicated by acute fuel supply and price issues.

Both the Federal Energy Regulatory Commission (FERC) and the North American Electric Reliability Corporation (NERC) have expressed concern about the reliability implications of increased natural gas use.

Building Block 3: New Renewable and Nuclear Generation

The next step is to increase contributions from carbon-free sources, which EPA proposes to do through additional RE installations and the delayed retirement and new construction of nuclear facilities.

EPA assembled RE generation goals for each state by combining existing renewable generation and the average generation targets reflected in state Renewable Portfolio Standards (RPS) within six national regions, plus Hawaii and Alaska. These regions are laid out in Table 2, along with state RE targets, if applicable.

Table 2. Building Block 3 Renewable Energy Regions

	State	State RE Target	Target Year	Region Target (by 2029)
East Central	Delaware	25%	2027	16%

District of Columbia	20%	2023		
Maryland	20%	2022		
New Jersey	24%	2021		
Ohio	13%	2024		
Pennsylvania	8%	2021		
Virginia				
West Virginia				
North Central	Illinois	25%	2025	15%
	Indiana			
	Iowa			
	Michigan	10%	2015	
	Minnesota	30%	2020	
	Missouri	15%	2021	
	North Dakota			
	South Dakota			
	Wisconsin	10%	2015	
Northeast	Connecticut	23%	2020	25%
	Maine	40%	2017	

Massachusetts	33%	2030		
New Hampshire	25%	2025		
New York	29%	2015		
Rhode Island	16%	2019		
Vermont				
South Central	Arkansas			20%
	Kansas	20%	2020	
	Louisiana			
	Nebraska			
	Oklahoma			
	Texas			
Southeast	Alabama			10%
	Florida			
	Georgia			
	Kentucky			
	Mississippi			
	North Carolina	13%	2021	
	South Carolina			
	Tennessee			

West	Arizona	15%	2025	21%
	California	33%	2020	
	Colorado	30%	2020	
	Idaho			
	Montana	15%	2015	
	Nevada	25%	2025	
	New Mexico	20%	2020	
	Oregon	25%	2025	
	Utah			
	Washington	15%	2020	
	Wyoming			
N/A	Alaska			10%
	Hawaii	40%	2030	

Captured from Tables 4.2 and 4.3 in EPA's GHG Abatement Measures Technical Support Document

The regional RE targets determine how much capacity EPA thinks each region and state can attain. There are a few glaring problems with this analysis, like interstate asymmetries in renewable energy capacity, transmission access, and investment potential. We are particularly concerned that EPA does not understand the goals established by the state programs and that it relies on one state to form the RE goal for the south central and southeast regions.

States have been developing their RPS according to their own priorities in the absence of coordinated federal action. This means that each state has developed its own definitions for renewable energy and has created its own rules for achieving these targets. In most cases, it is not as simple as creating a certain amount of renewable electricity by a certain date. Let's consider four examples, described in Table 3.

Table 3. States with Unique RPS Considerations

State	
Colorado	Non-retail and community-based projects count more toward RE generation goals than other projects, per MWh
Illinois	Existing hydropower can count toward RE generation goals
Kansas	RE target reflects 20 percent of peak demand capacity, a much higher target than total state generation
North Carolina	Energy efficiency can count toward RE generation goals

It's clear that these programs are hard to compare across states and timelines, and that overall RE targets expressed by each RPS do not necessarily reflect actual planned generation. If EPA properly evaluated these programs, RE targets would be lower and much easier to achieve.

Further, state RPS programs typically only require a certain portion to come from in-state generation. In most cases, the majority of RE generation can come from capacity installed in another state. EPA glazes over these differences and holds states on the hook for much higher levels of RE generation than they had intended under state policy.

A second concern is that the RE targets for both the south central and southeast regions are established using RPS targets for just one state. Especially concerning is that both these states, Kansas and North Carolina, respectively, do not have straight-forward RPS targets that reflect intended generation.

The Kansas RPS calls for the installation of sufficient capacity to meet peak demand – a much higher threshold than typical RE generation goals. North Carolina allows energy efficiency improvements to count toward the state RPS, diminishing the contributions of RE. These states also represent a relatively small portion of power generation and sales in their respective regions. RE is forcing these regions to achieve unrealistic RE targets that may jeopardize the states' ability to develop meaningful implementation plans for the CPP.

We will take the opportunity to mention that EPA is content to assume that under-construction nuclear power will come online and older facilities will continue to operate. We haven't completed a new nuclear facility in a generation and EPA should be cautious about taking those new power supplies for granted. Moreover, many older nuclear facilities will reach the end of their 60-year operating license before 2029. It may not be possible to solicit subsequent license renewal for these facilities out to 80 years in order to satisfy the carbon-free generation needs of the compliance window.

Building Block 4: Demand Side Energy Efficiency

Finally, EPA proposes that states can achieve emissions reductions by reducing electric consumption. The cleanest energy is certainly the energy you never need to produce. We have established that EPA baseline for energy efficiency potential is quite shaky. We must also note that EPA has not appropriately considered costs

and that its estimated gains of 1.5 percent each year seem excessively ambitious in the context of other analysis.

In their comments to EPA, both NERC and the Electric Power Research Institute (EPRI) note that their own estimates of demand side energy efficiency fall far short of EPA's levels. EPRI further notes that ambitious energy efficiency targets will require programs that overcome substantial financial, market, communications, and perceptual obstacles to the adoption of economic efficiency improvements.

It is impossible to determine the costs imposed by building block 4, given EPA's thin analysis of efficiency investments in the baseline. EPA should appreciate that a clear cost accounting is extremely necessary for this goal in particular. Efficiency investments are widely regarded as least-cost emissions reduction achievements, but any failure to realize end use efficiency will force a state to compensate with other building blocks that require an expensive and time consuming planning, permitting, financing, and construction process.

Finally, EPA must use the final rule to establish a clear set of best practices to appropriately monitor, measure, evaluate, and verify the contributions of energy efficiency programs. With a number of different programs in the baseline, states will need guidance to count compliance appropriately.

IMPLEMENTATION CONCERNS AND RISKS TO ELECTRIC RELIABILITY

This proposal puts in tension environmental objectives and the reliable operation of the bulk power system. Regulators at FERC and NERC, experts at EPRI, and power suppliers and utility operators across the board have expressed concern over the complicated implementation of this rule.

Under the Clean Air Act, EPA is directing states to establish emissions targets from their generation fleets. Unfortunately, the bulk power system is much more complicated than state interventions. Decisions involving the electric system involve merchant power facilities, integrated utilities, electric co-ops, state power corporations, federal power corporations, Independent System Operators, Regional Transmission Organizations, state regulators, public utility commissions, and federal regulators, all in the context of providing stable, reliable, and cheap power to support public safety and economic growth. This is an extremely intricate system, and the CPP aims to do nothing short of remaking it completely.

EPA is also not leaving the electric system with a lot of time to comply. The proposal and acceptance process of State Implementation Plans (SIP) must precede the lengthy planning and investment process necessary to new infrastructure. States that opt for a regional compliance strategy and receive approval of their SIP in June 2019 face special concerns in rushing the decisions necessary to come into compliance in 2020.

We encourage EPA to heed any comments they receive on the implications for a changing fuel mix, retiring generation capacity, the unique characteristics of new generation, challenges to integrating new resources and technologies, divergent demand and efficiency forecasts, options for flexible follow-on resources, installation of distributed resources, and thin reserve capacity margins. This rule will not be successful on a national level if it does not maintain resource adequacy at the local and regional levels.

Above all, we encourage EPA to exercise an abundance of caution and humility in finalizing this rule. Much research remains to clarify the regional and national impacts the CPP may have on the generation mix, infrastructure needs, and electric reliability. A rule that does not reflect the delicacy of the bulk power system will force tension between EPA and regulators tasked with managing the grid. It is possible to achieve

environmental goals and keep our power supply diverse, reliable, and inexpensive, but not with the current EPA proposal.

CONCLUSION

Thank you for the opportunity to express our views to EPA on this critical rulemaking. If you have any questions about our comment, please do not hesitate to contact us via phone or email.

Sincerely,

Sam Batkins and Catrina Rorke

[1] Jonathan S. Masur and Eric A. Poster, *Regulation, Unemployment, and Cost-Benefit Analysis*, available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1920441.